EDITORIAL

Lack of awareness and knowledge about biodiversity

The *New South Wales State of the Environment* report (EPA 1997) is chilling reading. The environmental damage and losses that it describes are great, our ability to assess the impacts of change are modest and our current capacity to halt or reverse the continuing degradation is constrained by "a lack of awareness and knowledge about biodiversity". The report is couched in non-alarmist language, but for those who have been following the plot for years, or even decades, the message is grim. To those zoologists caught up in environmental issues, it is compulsory reading. The report establishes a baseline from which one can work, plan and contribute. This edition of the *Australian Zoologist* makes such a contribution.

In their preface to the report, Harley and Shepherd state that they "are confident that you will find much valuable information . . . that will help conserve and improve our environment and that will keep New South Wales on the path towards ecological sustainability". Their confidence was well placed. It is a credit to a maturing society that such a report can be produced by government. It is also, as the preface says, a call for help and an acknowledgment that we have not yet achieved ecological sustainability.

With a length of 500 pages, the report has a lot to say. There is also much that is not said. The report is an interpretation of the state of the environment, and as such needs to be read critically. It acknowledges the lack of knowledge about its topic. In the chapter on biodiversity, it states that "the pressures on biodiversity include: population growth . . . economic factors . . . [and] a lack of awareness and knowledge about biodiversity" (p. 316). Here then is a well defined niche for the *Australian Zoologist*. Its pages abound in new knowledge about biodiversity.

The papers in the *Australian Zoologist* are original contributions to knowledge, and they carry a message which leads to a greater awareness. Consider the paper by Greer and Mills. The opening two lines state: "The Bleating Tree Frog, *Litoria dentata* . . . is a small brownish frog distributed along the east coast of Australia from southeastern Queensland to just south of Sydney . . . Although the frog is locally common, there is little information on its basic biology". One of the commonest phrases in the zoological literature is "there is little information on . . ." As editorial policy, it is not encouraged, and sometimes it is deleted if it appears twice in a paper because it is so obvious. However, it is necessary that the phrase make a sufficiently regular appearance so that it will reappear in the 1999 report on the environment. It is, after all, uncompromisingly true.

Now consider the small brownish frog. Being small is not much help, being brown does not help either, but being a frog has sufficient public support to help its case for survival. Frogs became protected in New South Wales in 1991, and some species enjoy the extra protection from being recognized as threatened. The paper by van Mortel and Goldingay on the Green and Golden Bell Frog *Litoria aurea* is based on this status. (The details of the legal status of frogs and reptiles in Australia was considered state by state in Lunney and Ayers 1993.)

The problems implicit in being small, brown and unprotected is raised to new levels of concern when the biology and conservation of the invertebrates, the other 99% of the fauna, is considered. "The other 99%" was the title of a successful conference held at the Australian Museum in December 1997. Readers of the *Australian Zoologist* can look forward to the proceedings being published by the Royal Zoological Society of New South Wales.

We all look forward to ideas from the publications of the Royal Zoological Society of New South Wales finding their way into the next edition of the NSW State of the Environment report, and hence into better legislative protection and an active programme of research into the threatening processes that continue to whittle away our native biodiversity. Concerns about the other 99% might provoke a response that sees the specific needs of invertebrates reflected in the next state of the environment report.

The issues of frog and reptile biology and conservation have had a continuous airing in the *Australian Zoologist* since the transactions on Herpetology in Australia appeared in 1993. Beside the two frog papers in this edition, there are also two reptile papers (Kutt *et al.* and Lemckert) tackling quite different issues. Both contribute to a growing awareness of this often shunned class of vertebrates. The forthcoming transactions on "the other 99%" will, it is hoped, set a trend in papers on invertebrate conservation being submitted to the *Australian Zoologist*.

The steady emergence of papers on bats is most encouraging. Bats are nocturnal, mostly cryptic, and hard to catch and identify. Yet every study emphasises their importance to the broader picture. The two papers by Martin reveal the level of attention needed to elucidate the details and dispel myths about flying foxes. There is no doubt that flying foxes will reappear in the zoological literature and policy arena. It is a real race against time to gather enough information to properly manage this controversial taxon before decisions are made that may adversely affect both the flying foxes and those who have to live with them. Here both knowledge and awareness are lacking. It is a nice case in point about our nocturnal fauna.

The paper by Law *et al.* on the bats of the south-west slopes of New South Wales is one of a set of four survey papers on the forests of the region. The rising importance of bats as a group deserving of conservation attention. is reflected in the fact that an entire paper is now devoted to them in a regional survey. One does not need a long memory to recall mammal survey papers that either did not mention bats, or stated that bats were not included in the survey. No explanation was offered for bypassing the bats, it was just accepted by referees and editors as normal. However, although it is now accepted that bats rate a proper mention, the difficulties of working with this group have yet to be overcome.

Law *et al.* in their forest survey of bats rely in part on sound detection, in this case the Anabat system. The application of this technique is still in its early phases. The paper by de Oliviera acknowledges this limitation and presents an approach to standardising the echolocation calls of 17 microchiropterans from Queensland. There is much promise in use of bat sounds to pick which species are present, and in one sense it is a challenge to see how much information we can find before the bats and their habitats are lost. When one compares the limits to the capacity to acquire information, such as how to know what bat was that, to the already identified losses to the environment as set out in the New South Wales State of the Environment Report, it is apparent that much information has slid into eternity before we ever recorded it. Grim as the report is, by sticking to the facts of what has been lost it has had to understate the losses. Thus the real state of the environment is worse than reported.

The State of the Environment Report is predominantly about data. The skills needed to collect the data reflect the ideas of the people who sought the data. Their ideas provide a major impetus for acknowledging the problems and setting in train some of the restoration strategies. The real state of the environment thus includes the state of our intellectual capital that can see and fix the problems. This concept of intellectual capital, the state of thinking about the environment, is too hard as yet to put in a state of the environment report. When it does receive specific attention there will be better recognition of our researchers, field investigators, bush regenerators, wildlife veterinarians, dunecare workers, many public servants, community-minded groups, and writers and editors, to name but a few, who are vital players in improving the state of our environment. The state of the environment is clearer because there are so many interested players. The means of communicating concerns, identifying priorities and seeing how all the parts fit together is still in its early stages. The State of the Environment Report implicitly says that. We are still trying to identify the problems and the issues. The next report is awaited with interest, and in the meantime it is appropriate to comment on the existing report.

If lack of knowledge and awareness is a root cause of the pressures on biodiversity, then it is an intriguing exercise to estimate how much we do not know. One simple test is to ask what will be in the 2098 State of the Environment Report. In 100 years this edition of the *Australian Zoologist* will be deep in the archives, yet it will have contributed to the gaining of awareness and information that set the scene for 2098. One might guess that a huge pile of editions of this journal, indeed all Australian biological journals, will not suffice to set the present scene because there is so much information yet to gather. However, when one looks at how information is communicated it might be evident that the rate of acquisition of new knowledge and its publication is going to increase only slowly. There are simply not enough trained zoologists, and not enough of them are willing to go through the editorial process of independent refereeing and dealing with editorial demands for clear thinking and unambiguous writing.

A cynic might say that the state of the environment report in 100 years will be thinner because there is not much left to report on. What really emerges from the exercise is that it is hard to see not only what the environment will look like, but also what the state of our intellectual environment will be. To keep our intellectual environment as sharp as possible, criticism must be offered, debated and accepted as part of the process. Even this editorial is open for comment. Letters are welcome, so are critical items and reviews. The abundance of book reviews in this edition is also part of this process.

The converse exercise is to look back 100 years or so, and try to reconstruct an 1898 State of the Environment Report. Although 1898 is not such a distant year, there is little that remains for a thorough reconstruction to be made. We rely on glimpses, and even they take considerable scholarship. Here the apparently curious piece by Elery Hamilton-Smith on bat guano records the damage to a rich bat cave from the mining of guano at Naracoorte in South Australia. The paper is entitled "Much ado about very little..." The bat cave story combines a number of growing themes, and one of the important ones among them is the skill in making an ecological interpretation from the data gathered. The environment is not a static entity, and it needs to be recognized by readers of state of the environment reports that the ground is shifting under our feet. When ecological history becomes a better recognized discipline the rate of change to our environment will become more apparent.

This edition of the *Australian Zoologist* carries six survey papers, the four already mentioned (on the forests of the south west slopes of New South Wales), and two others from specific locations in New South Wales, one on the coast, the other inland. Survey papers are one of the cornerstones in our search for information about the environment. Environmental impact assessments depend on thorough baseline surveys. The current survey papers speculate on what might have been present 100 years or so ago, and carry some suggestions for better local management and improved survey techniques. The *Australian Zoologist* has had a long history of publishing fauna survey papers and so helps plug that gap in knowledge identified in the state of the environment report.

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